IN THE CLAIMS:

1. (currently amended) A rechargeable lithium battery including a negative electrode made by depositing a noncrystalline thin film composed entirely or mainly of silicon on a current collector, which thin film undergoes an increase in porosity that advances inside from the thin film surface during charge and discharge, a positive electrode and a nonaqueous electrolyte, characterized in that said nonaqueous electrolyte contains added carbon dioxide dissolved therein in addition to carbon dioxide formed during fabrication of the battery, whereby the increase in porosity of said thin film during charge and discharge is suppressed, and in that said noncrystalline thin film is divided into columns by gaps extending in the thickness direction of the film.

2. (previously presented) The rechargeable lithium battery as recited in claim 1, characterized in that the amount of added carbon dioxide dissolved in said nonaqueous electrolyte is at least 0.001 weight %.

3. (previously presented) The rechargeable lithium battery as recited in claim 1, characterized in that the amount of added

carbon dioxide dissolved in said nonaqueous electrolyte is at least 0.01 weight %.

4. (previously presented) The rechargeable lithium battery as recited in claim 1, characterized in that the amount of added carbon dioxide dissolved in said nonaqueous electrolyte is at least 0.1 weight %.

5. (previously presented) The rechargeable lithium battery as recited in claim 1, characterized in that a surface of said current collector has an arithmetic mean roughness Ra of at least 0.1 μm.

6. (previously presented) The rechargeable lithium battery as recited in claim 1, characterized in that said current collector comprises a heat-resisting copper alloy foil.

7. (original) The rechargeable lithium battery as recited in claim 6, characterized in that said current collector comprises a heat-resisting copper alloy foil having an electrolytic copper or copper alloy surface layer.

8. (previously presented) The rechargeable lithium battery as recited in claim 1, characterized in that said noncrystalline thin film composed mainly of silicon contains at least one of cobalt and iron.

9. (previously presented) The rechargeable lithium battery as recited in claim 1, characterized in that said nonaqueous electrolyte contains a fluorine-containing compound or $LiClO_4$.

10. (original) The rechargeable lithium battery as recited in claim 9, characterized in that said fluorine-containing compound is $LiXF_y$ (wherein X is P, As, Sb, B, Bi, Al, Ga or In; y is 6 if X is P, As or Sb and y is 4 if X is B, Bi, Al, Ga or In); $LiN(C_mF_{2m+1}SO_2)(C_nF_{2n+1}SO_2)$ (wherein m and n are independently integers of 1 - 4); or a fluorine-containing lithium borate derivative.

11. (original) The rechargeable lithium battery as recited in claim 10, characterized in that said fluorine-containing lithium borate derivative is $LiBF_2(O_x)$.

12. (previously presented) The rechargeable lithium battery as recited in claim 1, characterized in that said nonaqueous electrolyte contains cyclic carbonate and chain carbonate.

13. (previously presented) The rechargeable lithium battery as recited in claim 1, characterized in that a solvent of said nonaqueous electrolyte is a mixed solvent of cyclic carbonate and chain carbonate.

14. (previously presented) The rechargeable lithium battery as recited in claim 12, characterized in that at least one of ethylene carbonate and propylene carbonate is contained as said cyclic carbonate.

15. (previously presented) The rechargeable lithium battery as recited in claim 12, characterized in that diethyl carbonate is contained as said chain carbonate.

16. (previously presented) The rechargeable lithium battery as recited in claim 12, characterized in that cyclic carbonate having an unsaturated carbon bond and another cyclic carbonate are contained as said cyclic carbonate.

17. (original) The rechargeable lithium battery as recited in claim 16, characterized in that said cyclic carbonate having an unsaturated carbon bond is vinylene carbonate.

18. (previously presented) The rechargeable lithium battery as recited in claim 16, characterized in that a content by volume of said cyclic carbonate, excluding the cyclic carbonate having an unsaturated carbon bond, does not exceed 70 %, based on the total volume of the cyclic carbonate, excluding the cyclic carbonate having an unsaturated carbon bond, and the chain carbonate.

19. (previously presented) The rechargeable lithium battery as recited in claim 16, characterized in that a content by volume of said cyclic carbonate, excluding the cyclic carbonate having an unsaturated carbon bond, is 0.1 - 20 %, based on the total volume of the cyclic carbonate, excluding the cyclic carbonate having an unsaturated carbon bond, and the chain carbonate.

20. (previously presented) The rechargeable lithium battery as recited in claim 16, characterized in that a content by volume of said cyclic carbonate, excluding the cyclic carbonate having an unsaturated carbon bond, is 50 - 70 %, based on the total volume of

the cyclic carbonate, excluding the cyclic carbonate having an unsaturated carbon bond, and the chain carbonate.

21. (previously presented) The rechargeable lithium battery as recited in claim 16, characterized in that a content by weight of said cyclic carbonate having an unsaturated carbon bond is 0.1 - 10 %, based on the total weight of the other cyclic carbonate and the chain carbonate.

22. (previously presented) The rechargeable lithium battery as recited in claim 1, characterized in that said noncrystalline thin film is formed by an evaporation process.

23. (withdrawn) A method for fabricating a rechargeable lithium battery including a negative electrode, a positive electrode and a nonaqueous electrolyte, characterized as comprising the steps of:

depositing a noncrystalline thin film composed entirely or mainly of silicon on a current collector to prepare said negative electrode;

dissolving carbon dioxide in said nonaqueous electrolyte; and

assembling a rechargeable lithium battery using said negative electrode, positive electrode and nonaqueous electrolyte.

24. (withdrawn) The method for fabricating a rechargeable lithium battery as recited in claim 23, characterized in that the step of dissolving carbon dioxide in the nonaqueous electrolyte includes a step of blowing gaseous carbon dioxide into the nonaqueous electrolyte.

25. (withdrawn) The method for fabricating a rechargeable lithium battery as recited in claim 23, characterized in that the step of assembling a rechargeable lithium battery includes a step of assembling a rechargeable lithium battery under the atmosphere including carbon dioxide.

26. (withdrawn) The method for fabricating a rechargeable lithium battery as recited in claim 23, characterized in that said noncrystalline thin film is deposited by supplying a raw material from a vapor phase.

27. (withdrawn) The method for fabricating a rechargeable lithium battery as recited in claim 26, characterized in that said

noncrystalline thin film is deposited by a sputtering, chemical vapor deposition or evaporation process.

28. (withdrawn) The method for fabricating a rechargeable lithium battery as recited in claim 26, characterized in that said noncrystalline thin film is deposited by an evaporation process.